REMARKS

Claims 13 and 16 have been cancelled, and claims 1, 11 and 14 have been amended. Claims 1-12, 14-15 and 17-20 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

2-4. Claims 1-2, 4-13 and 16-20 currently stand rejected for allegedly being obvious in view of U.S. Patent 4,843,616 to Hoffman (hereinafter "Hoffman").

Claim 1

As amended, claim 1 recites a method of generating an auxiliary symbol when a digital signal locked to a quadrature signal pair is received. The method includes:

> "determining nominal radii and range limits according to predetermined positions of the digital signal in a plane determined by the quadrature signal pair;
> determining a preliminary symbol from the digital signal by sampling the digital signal as controlled by a symbol sampling clock;
> determining polar coordinates of the preliminary symbol;
> determining a nominal radius from the polar coordinates of the preliminary symbol according to the range limits, where the determined nominal radius and an angle component define polar coordinates of the auxiliary symbol in the plane of the quadrature signal pair; and
> adjusting at least one decision-feedback controller of a demodulator in response to the auxiliary symbol." (emphasis added, cl. 1).

The method of claim 1 uses the auxiliary symbol, defined by the determined nominal radius and an angle component, to adjust at least one decision-feedback controller of a demodular. As recited in claim 1, the determined nominal radius is determined from the polar coordinates of the preliminary symbol.

Hoffman neither discloses nor suggests the use of a preliminary symbol, which is converted to polar coordinates, to determine the nominal radius, wherein the determined nominal radius and an angle component define polar coordinates of an auxiliary symbol. A fair and proper reading of Hoffman indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Hoffman merely discloses the use of a phase difference signal to control VCO 10 (see Hoffman col. 4, lines 57-61 and col. 10, lines 27-35). Consequently, Hoffman is incapable of even suggesting to a skilled person at the time of the invention *"adjusting at least one decision-feedback controller of a demodulator in response to the auxiliary symbol."* (cl. 1).

Claim 11

As amended, claim 1 recites a circuit for generating an auxiliary symbol from a preliminary symbol in a device for receiving a digital signal locked to a quadrature signal pair. The circuit includes:

> "a resolver that converts Cartesian quadrature signal components of the preliminary symbol into polar coordinates;
> a radius decision stage that determines from the polar coordinates of the preliminary symbol the most probable nominal radius, where the most probable nominal radius and an angle component of the preliminary symbol define polar coordinates of the auxiliary symbol; and
> a control unit that adjusts at least one decision-feedback controller of a demodulator in response to the auxiliary symbol." (emphasis added, cl. 11)

The circuit of claim 11 uses the auxiliary symbol, defined by the determined nominal radius and an angle component, to adjust at least one decision-feedback controller of a demodulator. The determined nominal radius is determined from the polar coordinates of the preliminary symbol.

Hoffman neither discloses nor suggests the use of a preliminary symbol, which is converted to polar coordinates, to determine the nominal radius, wherein the determined nominal radius and an angle component define polar coordinates of an auxiliary symbol. A fair and proper reading of Hoffman indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Hoffman merely discloses the use of a phase difference signal to control VCO 10 (see Hoffman col. 4, lines 57-61 and col. 10, lines 27-35). Consequently, Hoffman is incapable of even suggesting to a skilled person at the time of the invention *"a control unit that adjusts at least one decision-feedback controller of a demodulator in response to the auxiliary symbol."* (cl. 11).

Claim 17

As amended, claim 17 recites a method for adjusting at least one decision-feedback controller within a demodulator using an auxiliary symbol in place of a decision symbol. The method includes:

> "receiving a digital signal locked to a quadrature signal pair;
> determining nominal radii and range limits according to predetermined positions of the digital signal in a plane determined by the quadrature signal pair;
> determining a preliminary symbol from the digital signal;
> determining the auxiliary symbol from the preliminary symbol; and
> adjusting the at least one decision-feedback controller in dependence on the auxiliary symbol." (emphasis added, cl. 1)

The method of claim 17 uses the auxiliary symbol to adjust at least one decision-feedback controller of a demodulator. As recited in claim 17, the determined nominal radius is determined from the preliminary symbol.

Hoffman neither discloses nor suggests the use of a preliminary symbol, to determine the auxiliary symbol, where auxiliary symbol is used to adjust the at least one decision-feedback controller. A fair and proper reading of Hoffman indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Hoffman merely discloses the use of a phase difference signal to control VCO 10 (see Hoffman col. 4, lines 57-61 and col. 10, lines 27-35). Consequently, Hoffman is incapable of even suggesting to a skilled person at the time of the invention *"adjusting at least one decision-feedback controller in dependence on the auxiliary symbol."* (cl. 17).

5. Claim 3 currently stands rejected for allegedly being obvious in view of Hoffman and Applicant Admitted Prior Art (hereinafter "AAPA").

It is respectfully submitted that this rejection is now moot since claim 3 depends from claim 1, which is patentable for at least the reasons set forth above.

6. Claims 1, 11 and 17 currently stand rejected for allegedly being obvious in view of U.S. Patent 5,640,417 to Barabash (hereinafter "Barabash").

Claim 1

As amended, claim 1 recites a method of generating an auxiliary symbol when a digital signal locked to a quadrature signal pair is received. The method includes:

> "determining nominal radii and range limits according to predetermined positions of the digital signal in a plane determined by the quadrature signal pair;
> determining a preliminary symbol from the digital signal by sampling the digital signal as controlled by a symbol sampling clock;
> determining polar coordinates of the preliminary symbol;
> determining a nominal radius from the polar coordinates of the preliminary symbol according to the range limits, where the determined nominal radius and an angle component define polar coordinates of the auxiliary symbol in the plane of the quadrature signal pair; and
> adjusting at least one decision-feedback controller of a demodulator in response to the auxiliary symbol." (emphasis added, cl. 1).

The method of claim 1 uses the auxiliary symbol, defined by the determined nominal radius and an angle component, to adjust at least one decision-feedback controller of a demodulator. As recited in claim 1, the determined nominal radius of the auxiliary symbol is determined from the polar coordinates of the preliminary symbol.

Barabash neither discloses nor suggests the use of a preliminary symbol that is converted to polar coordinates, to determine the nominal radius, wherein the determined nominal radius and an angle component define polar coordinates of an auxiliary symbol. A fair and proper reading of Barabash indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Barabash merely discloses the use of an energy signal as the control signal for AGC (see Barabash col. 8, lines 27-34). Consequently, Barabash is incapable of even suggesting to a skilled person at the time of the

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invention *"adjusting at least one decision-feedback controller of a demodulator in response to the auxiliary symbol."* (cl. 1).

Claim 11

As amended, claim 1 recites a circuit for generating an auxiliary symbol from a preliminary symbol in a device for receiving a digital signal locked to a quadrature signal pair. The circuit includes:

> "a resolver that converts Cartesian quadrature signal components of the preliminary symbol into polar coordinates;
> a radius decision stage that determines from the polar coordinates of the preliminary symbol the most probable nominal radius, where the most probable nominal radius and an angle component of the preliminary symbol define polar coordinates of the auxiliary symbol; and
> a control unit that adjusts at least one decision-feedback controller of a demodulator in response to the auxiliary symbol." (emphasis added, cl. 11)

The circuit of claim 11 uses the auxiliary symbol, defined by the determined nominal radius and an angle component, to adjust at least one decision-feedback controller of a demodulator. The determined nominal radius is determined from the polar coordinates of the preliminary symbol.

Barabash neither discloses nor suggests the use of a preliminary symbol that is converted to polar coordinates, to determine the nominal radius, wherein the determined nominal radius and an angle component define polar coordinates of an auxiliary symbol. A fair and proper reading of Barabash indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Barabash merely discloses the use of an energy signal as the control signal for AGC (see Barabash col. 8, lines 27-34). Consequently, Barabash is incapable of even suggesting to a skilled person at the time of the

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invention *"a control unit that adjusts at least one decision-feedback controller of a demodulator in response to the auxiliary symbol."* (cl. 11).

Claim 17

As amended, claim 17 recites a method for adjusting at least one decision-feedback controller within a demodulator using an auxiliary symbol in place of a decision symbol. The method includes:

> "receiving a digital signal locked to a quadrature signal pair;
> determining nominal radii and range limits according to predetermined positions of the digital signal in a plane determined by the quadrature signal pair;
> determining a preliminary symbol from the digital signal;
> determining the auxiliary symbol from the preliminary symbol; and
> adjusting the at least one decision-feedback controller in dependence on the auxiliary symbol." (emphasis added, cl. 1)

The method of claim 17 uses the auxiliary symbol to adjust at least one decision-feedback controller of a demodulator. As recited in claim 17, the determined nominal radius is determined from the preliminary symbol.

Barabash neither discloses nor suggests the use of a preliminary symbol to determine the auxiliary symbol, where auxiliary symbol is used to adjust the at least one decision-feedback controller. A fair and proper reading of Barabash indicates that this prior art reference neither discloses nor suggests use of both (i) a preliminary symbol and (ii) an auxiliary symbol. Specifically, Barabash merely discloses the use of an energy signal as the control signal for AGC (see Barabash col. 8, lines 27-34). Consequently, Barabash is incapable of even suggesting to a skilled person at the time of the invention *"adjusting at least one decision-feedback controller in dependence on the auxiliary symbol."* (cl. 17).
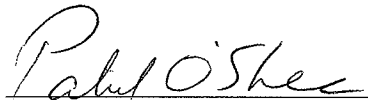
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7.   The indication that claims 14-15 contain allowable subject matter and would be allowed if rewritten to no longer depend from a rejected base claim is noted and appreciated.

Claim 14 has been rewritten into independent claim format in order to secure the allowance of claims 14 and 15.

For all the foregoing reasons, reconsideration and allowance of claims 1-20 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,

Patrick J. O'Shea
Reg. No. 35,305
O'Shea Getz P.C.
1500 Main Street, Suite 912
Springfield, MA 01115
(413) 731-3100, Ext. 102